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OBSERVATIONS
ON THE
HISTORY, USE, AND CONSTRUCTION,
OF
OBTURATEURS,

OR, WHAT HAVE HITHERTO BEEN CALLED IN THIS COUNTRY,

Artificial Palates,

WITH CASES,

ILLUSTRATIVE OF RECENT IMPROVEMENTS.

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PREFACE.

To afford information to the Members of the profession of Medicine and Surgery upon a subject of considerable importance, and to give the fruits of research and the results of many mechanical experiments to the Artists who are engaged in the same avocation as himself, is the intention of the writer.

When it is considered, that no work like the present exists, and that those whose business it is to remedy defects of the Palate by mechanical means, are, very generally, ignorant of the various improvements and modifications which have been made in the apparatus for that purpose, from the time of its first introduction, the utility of such a publication must be obvious.

The author acknowledges his obligations to the French writers, from whose productions he has derived information not to be obtained from English publications.

A very extensive gratuitous practice, has given him ample opportunities of proving the efficacy of his own improvements, by which, the important functions of deglutition and articulation have been restored, in a manner that could not be effected by any of the means hitherto described.

He hopes the annexed observations may lead to the advancement of an art, the design of which, is to ameliorate some of the most distressing of physical inconveniences.

111, Crawford Street, Montagu Square.

August 1, 1824.

ERRATA.

- Page 7, line 3, *for* empyric *read* empiric.
Page 8, line 2, *for* improvement Obturateurs *read* improvement
of Obturateurs.
Page 14, line 7, *for* roof the *read* roof of the.
Page 15, line 20, *for* springs *read* stems.
Page 21, line 19, *for* M. De la Barre *read* M. De la Barre's.
Page 28, line 10, *for* groved *read* grooved.
Page 30, line 13, *for* stripes *read* strips.
Page 35, line 19, *for* where *read* were.
Page 36, line 9, *for* inflamation *read* inflammation.
Page 40, line 14, *for* perfered *read* preferred.
Page 42, lines 12 & 23, *for* inflamation *read* inflammation.
Page 45, line 8, *for* empyric *read* empiric.
Page 46, line 14, *for* aparatus *read* apparatus.
Page 52, line 9, *for* neccessary *read* necessary.
Page 52, line 24, *for* hithertoo *read* hitherto.

ENTERED AT STATIONERS' HALL.



INTRODUCTION.

THOSE who have witnessed the deformity, inconvenience, and distress, which are produced in individuals by defects in the Palate, require no argument to convince them, that the art by which such misfortunes are alleviated, is one of no trifling importance.

From the earliest times, congenital and accidental defects of these parts have, doubtless, been known; but since the appearance of lues, they have been more frequent. We find, however, that little has been said by surgical writers upon the construction of instruments, proper for supplying these defects; and it is much to be lamented, that medical practitioners have not appropriated more

of their talents to this subject. After having snatched a fellow creature from the ravages of disease, they abandon him to the care of one, whose mechanical genius enables him to make an instrument which will supply the deficiency only, instead of placing him under the care of an artist who has devoted himself to the study of these lesions, and who is not only able to construct an instrument which will supply the deficiency, but at the same time one, that will not impede nature in her curative intentions.

Authors have transmitted to us various patterns of mechanical contrivances, all of which have, in this country, been erroneously called *Artificial Palates*, but in France, are known under the more appropriate appellation of *Obturateurs*,—a term derived from the latin word *obturo*, *to stop up*. We are indebted to the French artists for the most ingenious of these instruments, and likewise for the greater part of the improvements that have been made from the time of the original sponge *Palate* described by Ambroise Paré.

It is much to be regretted, that, till lately, no improvement of any importance appears to have been made, to which we can attach the name of

an Englishman. We are occasionally astonished by the glaring advertisement of some ignorant empiric, who has at once found out the *panacea* for all the afflicted, but alas it is "Vox et præterea nihil," imparting no useful information.

HISTORICAL ACCOUNT

OF THE PROGRESSIVE IMPROVEMENT

OBTURATEURS.

THE art of supplying defective Palates, appears to have been known at an early period. Gillemeau mentions them as being in general use among the Greeks, who termed them Hyperorë. They have also been noticed by Amatus Lusitanus in his *Curat: Medic: Centur:* in Haller's *Bibl: Chir:* and in Hollerius' *Obser: ad calcem de morbis internus*, and by several of the German writers, among whom are Camper, Eckardt, Frize, Von Leveling, Purman, Siebold, and Vylhoorn.

The materials then used were ill adapted to the purpose, being composed of sponge, wax, and other soft substances, which were thrust into

the aperture to fill up the cavity. Alexander Pétronius, in his treatise entitled *De Margo Galico*, published in 1565, gives an account of various methods for supplying defects of the Palate. This work contains the following observation : “If the carious bone of the Palate come away of itself, or be brought away by art, pronunciation is altered, so that the patient is unable to articulate or make himself understood : but it is possible in certain circumstances to repair this loss ; for instance, when there is but one aperture in the Palate, it may be stopped with cotton, or wax, or with a gold plate, or in any other manner which the genius of the artist may suggest, taking care to give these instruments the same concave form as the palatine roof.” It is probable, however, that Pétronius, although he has described various materials for constructing these instruments, was not the inventor of them, otherwise he would have been more explanatory as to the method of constructing them, and in what manner they were retained in the aperture.

Celsus has not mentioned any thing upon the subject : he appears either to have been entirely unacquainted with these instruments, or to have esteemed them unworthy of remark.

Some few years after Pétronus's work, we see the subject revived by Ambroise Paré, who had engravings made of two Obturateurs, which he afterwards published in the year 1585: he thus expresses himself. "Sometimes a portion of the Palate bone is broken off and carried away, by balls from fire-arms, or it becomes carious by syphilitic virus; whence follows the difficulty of pronouncing words. Art has found the means of remedying this accident, and for this purpose we apply a gold or silver plate, larger than the aperture, of an arched form and of a middling thickness, having attached to the surface that answers to the nose, two stems of a few lines long, and a piece of sponge about the size of the orifice placed between the two stems. The instrument being fixed, the moisture of the part makes the sponge swell, which then becomes locked in the aperture, and maintains the plate in its position."

The other Obturateur differs from the above-mentioned. It is a similar plate, upon the superior surface of which is placed a small oblong blade, mounted upon a movable stem, that holds it about a line distant from the great plate, and is continued to the nut of a screw, which when turned, enables the blades to lie transversely to the aperture.

Scultetus in his Magazine of Surgery, gives a very incomplete description of an instrument for supplying a defective Palate. It is merely a sponge Obturateur, with no improvement upon the before-mentioned. This instrument, which he had engraved in 1685, he states to have been designed by Fabrice de Hildan, but it is generally supposed very erroneously, as that author published in 1595; it is therefore most likely he was acquainted with the one described by Ambroise Paré.

Garengot in his treatise on instruments, printed in 1715, describes an Obturateur similar to the first one of Paré's, but no improvement.

Heister in his Institutions of Surgery, mentions a sponge Obturateur which differed from Paré's in the following particular. The stem to which the sponge was affixed, was a tube pierced with holes, which served as a passage for thread, to which the sponge was attached.

In 1776, M. Verdail published an interesting case, in the Journal de Medicine, of a man who having lost his nose, and all the partition which separates the mouth from the nasal fossa, in a great measure repaired this defect, by a con-

trivance of his own. He employed a very thin sponge, proportioned and fitted to the opening, the anterior surface of which he covered with spanish leather, and replaced the Uvula, by a little thin piece of elastic silver, furnished with a little sponge. In this manner was the aperture closed, the edges being gently compressed with the sponge, was thereby held in its position,

To M. Piere Fauchard are we indebted for some valuable improvements in this instrument. In his treatise, entitled *Le Chirugien Dentiste*, published in 1786, he gives a minute description of several Obturateurs, and appears to have been aware of the numerous defects of the sponge instrument, as he constructed one upon the principle of Paré's, but far more ingenious, substituting for the movable band two lateral wings, one of which was moved round by a central axis, while the other remained fixed. The fixed wing, however, being found exceedingly imperfect, this instrument soon fell into disuse, and was substituted by another, with wings, both possessing a vertical movement, which admitted of their being moved to a greater or less distance from the plate, through the medium of a counter screw, according to the natural thickness of the Palate. This instrument was formed to carry teeth; and appears to have

been the first constructed upon that principle.

Various Artists have constructed Obturateurs since the time of Fauchard, all of which they have formed upon the plans of their predecessors, some being made with wings similar to Fauchard's, others with two bolts made to slip after the instrument was affixed, and some with metallic bands made to move upon a hinge, by means of an axis. There have been likewise complete Palates, all of which have been more or less ingeniously contrived, and deserve our attention, while tracing the improvement of this useful instrument.

Bourdet describes two Obturateurs, accompanied with some highly useful and interesting remarks upon the subject: he employs a plate in juxtaposition which is attached round the teeth by means of processes given off from the plate, which, in supplying the deficiency, does not impede the intentions of nature in filling up the cavity, should there be a disposition in the parts to do so, which he very judiciously remarks is frequently the case.

M. Touchard executed a toothed Obturateur, which was presented to the Society at Paris, and published in the *Journal General de Medicine*.


This instrument was an improvement upon that of Fauchard's. It was intended to supply the loss of a large portion of the maxillary bone, to the extent of five teeth, with almost the anterior half of the bony laminæ of the palatine arch. It was composed of a gold plate, adapted to the opening in the roof the Palate, upon which was fitted a piece of sea-horse tooth shaped to the form of the original parts, and firmly riveted to the plate by a metallic stem. It was formed to receive natural teeth which were firmly cemented. Two elastic gold bands, fastened to the sides of the instrument and pierced with holes, were carried backward, and having a tendency to separate, pressed firmly against the remaining teeth, and kept the whole apparatus in its proper situation.

M. Dubois Foucou invented an instrument in 1780, for an injury of the velum, possessing considerable ingenuity. It was composed of a long, thin, and highly elastic band or metallic plate, with two circular heads extending from the palatine vault, posteriorly, to the injury in the velum, covering that part which was defective. That it might follow its motions, it was pressed towards its anterior third, by two zigzag springs, each terminated by a small transverse

plate, which was fastened to the teeth on each side by ligatures. This instrument was a lever, the fulcrum being near the centre, the resistance behind the dental arch, and the power in the soft Palate.

M. De le barre in his invaluable treatise, gives a description of a variety of Obturateurs, among which are some invented by himself. One of these is certainly the most ingenious instrument, that has, hitherto, been projected. It is a complete Palate, intended to supply the whole of the bony and membraneous roof of the mouth. It is constructed in the following manner. An upper set of mineral teeth, surmounted by a palatine roof, carried from the side of the nasal process a circle, or saddle, which surrounded it like the lost substance, in the inside of which was carved a very thin cavity, that represented the thickness and figure of the nasal palatine floor. The teeth and Palate were attached to each other by springs, inserted into the metallic part in which the teeth were set. To the pharyngeal part of this instrument was attached a movable velum and uvula, composed of elastic gum. That these might fulfil the natural movements of those parts, during deglutition, an oval aperture was formed upon the forepart of the plate, to which was connected a valve,

closing hermetically, this being retained in its situation by a small spring. To this little plate was soldered a lever, which being carried backward, was made to rest upon another that was held equally both ways; being long enough to engage the principal plate, and flattened in order to lay hold of the movable velum. In deglutition therefore, the point of the tongue supported itself naturally against the Palate, and the valve being pressed upon, transmitted the movement to all the other parts, and the velum became lifted from the vertical to the horizontal position, so that neither food nor drink could ascend into the nose.

We are further indebted to M. De le barre, for the description of an instrument, intended for supplying the velum and uvula only, in a case in which these organs were entirely destroyed: Its construction was as follows. A plate folded upon itself of this figure  was made to embrace the posterior part of the nasal palatine floor, the nasal portion fitting up to the vomer, while the palatine portion formed a roof, each side of which gave attachment to a stem, which fixed upon one of the molar teeth on each side, by means of elastic bands with spurs. This apparatus gave support to a very thin piece of elastic gum, which was at-

tached to it by pivots, and formed to the natural shape of the velum and uvula. This instrument is said to have afforded all the advantages of the velum itself, although, as the author remarks, it is much less perfect than the one before mentioned.

Since the last mentioned treatise, by M. De la Barre, no further improvement has appeared upon the subject.

Having briefly traced the progress of this art during the two last centuries, it will be of advantage to consider, how far the various instruments that have been described are suited to the purpose for which they have been used.

The method of supplying palatine defects by means of soft substances, must necessarily have been attended with considerable inconvenience to the patient. They must have plugged up the nasal fossa, and when distended by mucous &c. have been very offensive, if they were not frequently removed and cleansed.

The use of sponge alone as an Obturateur, most likely gave rise to the sponge Obturateur with a plate, as described by Paré.

Although there have been so many improvements in these instruments, since their invention, it is somewhat remarkable, that Paré's sponge Obturateur still continues in general use in this country, notwithstanding it is decidedly the most injurious and imperfect that can be employed. It is injurious from the distended sponge pressing against the sides of the aperture, which are likewise continually irritated, and are often torn by the force used to withdraw it from the nasal fossa, that it may be cleansed, a process which requires to be frequently repeated, otherwise it will become highly offensive and disagreeable to the patient. If a distended body is permitted to make pressure against the sides of the aperture, the beneficent intention of nature, which tends to a final cure, will be wholly retarded, and a contrary process will be exercised: the diameter of the cavity will in process of time become considerably increased. All those artists who have attached themselves to the study of this subject, have doubtless seen this injurious tendency in the sponge Obturateur, and will perhaps agree, that it is an instrument that should be altogether discontinued.

Ambroise Paré, appears to have been aware of its numerous imperfections, as he proposed his

second instrument, with the movable blade, as an improvement upon the former.

These blades could only have been used where the length of the aperture exceeded its breadth, and the exact thickness of the Palate must first have been ascertained, otherwise the semi-circular turn could either not have been effected ; or if it were, the plate might be but loosely retained in the aperture.

Various other impediments must have occasionally presented themselves, which would have rendered this instrument very unsuitable for the purpose ; yet we find these Obturateurs to have been the only ones in general use for many years, until M. Pierre Fouchard projected his instrument with the movable wing, which was probably intended as an improvement on that of Paré ; but as that so slightly obviated the defects of this instrument, it very soon fell into disuse, until he constructed his second instrument with vertical wings, which was found to do away with all the inconveniences of the former. Having since undergone some improvements, it continues in general use among the French, and is the most perfect of winged Obturateurs.

M. Fouchard appears to have taken up the subject in a much more scientific manner than any of his predecessors; his method of placing teeth upon his Obturateurs, and that of making these instruments of bone, was an invention which does not appear to have been previously known; his treatise contains most minute, and at the same time interesting information, upon the subject before us, both as to the adapting of these instruments and their construction.

The ingenious Bourdet entertained different views upon the subject of Obturateurs, from those of his predecessors; observing the disposition there is in the parts to close, he very justly considered the importance of constructing an Obturateur that should not act in any way to impede this operation; this he accomplished in his juxtaposition plates, which were attached round the teeth. By this adaption every opportunity is given to facilitate the natural coalescence of the parts, and is certainly one of the most scientific improvements that has been published.

M. Touchard's toothed Obturateur, is merely an improvement upon the two instruments before mentioned, the bands by which it was held

in its position, were made to press against the inside of the teeth, without a counter resistance; this was ill conceived, as the constant force in one direction would be most likely to injure materially, those teeth which maintained the pressure.

M. Dubous Foucou's instruments for supplying a portion of the velum, would not be found so suitable for a perforation through that organ, as in a deficiency of any distinct portion of its posterior substance; from the nature of its construction, it would not keep the aperture closed under all the varied motions of the soft palate; but the formation of the springs are an original idea, which may be very usefully applied, in the construction of other Obturateurs.

No instrument appears to possess so much mechanical skill and ingenuity as the complete Palate of M. De la Barre, but he does not inform us by what means it is retained in its position; his other, for the supply of the soft palate, is, in many respects, incomplete, he directs that the Indian rubber should be rendered thin by powerful pressure, in warm water. We are well aware, that however much elastic gum may be pressed thin in warm water only, it will

not long retain its shape, and it will be found, that very shortly after it is placed in the mouth, it will return nearly to its former shape: the lateral edges of this instrument do not appear to be well adapted to guard against friction, which if ever so slight, is known to produce great inconvenience, M. De la Barre remarks, when describing this instrument, that, "it is much less perfect, than that which is adapted to the Palate, which is furnished with teeth, &c."

INTERESTING CASES
OF
CONGENITAL DEFECTS
OF THE
VELUM PENDULUM PALATI, UVULA, &c.
WHICH HAVE BEEN SUCCESSFULLY SUPPLIED
BY THE AUTHOR.

IT is rather remarkable, that our artists, who profess to remedy the various lesions of the Palate, have not been more anxious to possess themselves of information upon a subject of which they must be constantly made to feel their insufficiency, but when we consider, that many of these professors have arisen from among the lower order of mechanics, we need not wonder at the neglected state of this important part of mechanical surgery. It is not to be expected, that men of this description can be acquainted either with the anatomy or physiology of the parts which they are

called upon to imitate and supply. They will consequently be unsuccessful in those cases in which this knowledge is essential, as in defects of the Velum Pendulum Palati, Uvula, &c., which defects have in this country, been considered almost irreparable.

The French artists appear to have been successful in some of these lesions which have originated in disease, but I have been unable to discover that any artist has hitherto been successful in the construction of an instrument for the supply of congenital defects of these parts. Aware of the deficiency of our art, in this particular, it became, with me, a continual matter of experiment, having ample opportunities amongst patients attended gratuitously. After repeated failures, I at length constructed an instrument which was found to remedy most of the distressing inconveniences attending upon such a malformation.

The following case was published in the London Medical Repository, with an engraving Vol. XX, p. 365.

An interesting young lady, has laboured under this distressful malformation from her birth,

When an infant, it deprived her of the support of the breast,—the milk, when any could be drawn, having invariably escaped through the nose; and her articulation, from a later period to the time of my seeing her, was so defective as not to be understood but by those who were constantly about her. On her application to me, the appearances were as follow:—The fissure commenced immediately behind the two anterior incisores, extending backward through the palatal portion of the maxillary bone, through the os palati and velum pendulum palati, dividing the uvula, and giving rise to an unlimited communication between the nose and mouth.

When the case first came under my care, I was desirous of making an attempt to unite the edges of the soft palate, according to the suggestion of M. Roux;* but this mode of proceeding being altogether objected to by the parents, I was induced to try how far success might be obtained by mechanical means. With this view I obtained a correct model of the deficiency, from which a gold plate was formed to fit the roof of the mouth, reaching as far back as could be worn by the patient, to the posterior part of which, two

* Medical Intelligencer, Vol. I. p. 96.

pieces or flaps of Indian rubber were attached, thus filling up the deficiency of the soft palate. A small movable piece of the same material was also attached, by means of a gold hinge, to the centre of the lower piece, to imitate, as near as possible, the natural uvula. A piece of ivory was next fitted to the upper or back part of the gold plate, and carried upwards until it came in contact with the remaining part of the septum narium: this was of course, firmly attached. The whole was held in its situation by means of two gold springs soldered to the plate, which were fixed round one of the molares on each side.

It may readily be supposed that the introduction of such an apparatus would, in the first instance, cause great inconvenience. This was, however, overcome by perseverance on the part of the patient, who soon experienced a most material improvement in her speech, as well as great increase of comfort while taking her meals ; and the parents were most unexpectedly and agreeably surprised to find her possessed of considerable musical power, a qualification which none could have presumed to hope for. As the apparatus required to be frequently removed, that it might be cleansed, she was pro-

vided with two, the exact counterpart of each other.

It is now more than two years since the accomplishment of the above case, during which time, I have had ample opportunities, by gratuitous practice, of making a variety of experiments which have led to considerable improvements in this useful instrument, hitherto, in many respects, defective.

The bone piece is now substituted by gold plate, and the elastic gum velum and uvula are considerably improved, by a spring being affixed behind them, which admits of their partaking of the movements of the natural parts.

The present method of constructing it, is as follows.—A gold plate should be accurately fitted to the roof of the mouth, extending backwards to the os palati or extremity of the hard palate, a part of the plate being carried through the fissure, about an inch in length. To that part of the plate, which answers to the nasal fossa, should be soldered, two plates, meeting in the centre, and carried upwards through the fissure to the top of the remaining por-

tion of the vomer, to which it should be exactly adapted, at the same time being made to the natural shape of the nasal palatine floor: thus the fluid of the nose will be carried directly backward into the fauces. A piece of prepared elastic gum should next be attached to the posterior part of the plate, where the natural soft palate commences, extending downwards on each side, as low as the remaining part of the uvula, and grooved at its lateral edges, to receive the fissured portions of the velum. In the posterior centre of the elastic gum, should be placed a movable uvula. That these may partake of the natural movements of the parts during deglutition, a spring should be affixed behind them, one end of which should be fastened to the posterior and anterior surface of the principal plate, while the other end rests gently against the posterior face of the Indian rubber, which keeps it always in close apposition with the edges of the fissure during deglutition, &c.

The anterior lateral edges of the Indian rubber should be made to come considerably over the sides of the fissure, which will prevent it from slipping behind it during its altered positions, the whole apparatus being held up as before described, by

elastic gold springs fixed round the teeth on each side.

Congenital fissures of the Palate frequently extend through the anterior arch of the superior maxillary bone, and are attended with a deficiency of one or more of the front teeth, and combined with hare lip. Two cases of this description have come under my care, one of which was supplied in the following manner:—An instrument was constructed similar to the one before described, only that the anterior portion of the plate was brought forward into the cavity between the teeth, two of which were deficient. A piece of sea horse tooth was next fitted down upon this portion of the plate, shaped similar to the natural parts, and made to receive two natural incisors. The fissure in the lip was then supplied by a gold plate, formed to the natural shape of the parts, and enamelled so as to resemble the adjoining parts in colour. This was held in its proper situation by gold pivots, which were inserted into the piece of sea-horse tooth, so that it could be removed at pleasure. The patient was too timid to submit to the operation for hare lip, which of course would have been far preferable to any artificial supply.

As congenital defects of the Palate do not always extend to the palatine portion of the maxillary bone, but are limited to the fissure of the velum pendulum palati and uvula only, the before-mentioned Obturateurs, will not be found suitable in a defect of this description, without considerable alteration.

The first case of this nature that came under my care, and for which I constructed an instrument, was that of a young gentleman about twenty-five years of age, who had a congenital defect of the velum and uvula only, two thin stripes on each side, was all that remained of the velum, to which hung the half of the fissured uvula.

The method I pursued in supplying this defect was as follows :—

A gold plate was fitted across the Palate directly over the os palati, with a projecting portion soldered to its posterior centre, which was carried backward through the fissure to the extent of an inch. To the superior surface of this projecting piece was soldered two plates, as in the former Obturateur, being similarly shaped and adapted to the vomer. To the posterior middle of the principal plate, at the

termination of the hard palate, was affixed a fine hinge, from which was continued backward, a thin flat band, terminating by another hinge of a much smaller size; between these two hinges, being the space between the termination of the hard palate and the pendulous portions of the uvula, was placed a thin piece of prepared elastic gum, shaped and adapted in a manner similar to the Obturateur last described, being carried backward, so that the second hinge came directly in its posterior centre, to which hinge was attached an artificial uvula, between the back part of the Indian rubber, and to the elongated portion of the plate was affixed a similar spring to the one before described, and which acted in the same manner, the whole being held up by the gold bands, which were attached round the last molar teeth on each side. This Obturateur was found to answer all the purposes for which it was required, and similar ones have since been employed in a variety of cases, with the same success.

Before I quit the subject of congenital defects of the Palate, it may be of advantage to those artists who have to construct Obturateurs for

supplying these defects, to be acquainted with the following information.

The principal impediment to the success of all mechanical supplies in these malformations, is the tongue, which is generally formed in a peculiar manner in those persons who labour under this defect, and is endowed with action which differs from that it generally possesses. It is usually very long and narrow, in some cases so much so, that when thrust out of the mouth to its full extent, the tip may be made to pass under the chin. Nature appears to have been so profuse in this organ, that it may act during deglutition and speech, as a natural Obturateur to the fissure.

In infancy, during sucking, the child places the nipple under the tongue instead of upon it, the body of the tongue being thrust up into the fissure, which permits the milk to flow along under its edges into the pharynx. A different process takes place in more mature life, the food, after mastication, is collected together and permitted to go very far back upon the posterior body of the tongue, the anterior being turned up into the fissure, which acts as an Obturateur whilst the food is swallowed.

Fluids are at all times taken slowly and with caution, with the head inclined backward, or they would immediately escape by the nose.

When an artificial supply is placed in the mouth, the tongue, by reason of its length and peculiar action, will appear to the patient, to be confined and too large, and will be some time before it will accustom itself to the confinement, especially, during deglutition and speech.

The artificial uvula constantly touching the root of the tongue, will at first produce sickness, until the parts have become habituated to it. When we consider the peculiar pathology of these malformed parts, we need not wonder that the patient does not find improvement in his speech, immediately after the introduction of the Obturateur; nor need we be surprised that it should produce so much inconvenience, as the previous action of the tongue and surrounding parts, are wholly deranged by the closing of the fissure. They must therefore acquire a new *modus* of action, before perfect relief can be obtained.

DEFECTS
OF THE
VELUM PENDULUM PALATI, UVULA, &c.
OCCASIONED BY DISEASE.

DEFECTS of the velum, &c., occasioned by disease, are much more easy to remedy than those which are congenital. Relief in these cases is “*celeriter et jucundè* :” the patient is at once gratified by finding himself able to articulate with clearness, immediately after the introduction of the Obturateur.

As these defects are seldom the same, either in their situation or effect, no instrument will be found suitable in every case. I have therefore selected those cases, out of the number I have

supplied, which appear to be the most interesting.

The following case of double perforation through the palatal portion of the maxillary bone, with fissure of the soft palate and destruction of the uvula, was seen and approved, by several of the most eminent surgeons in London, and the particulars were published in the London Medical Repository. Vol. I. p. 488, New Series.

T. B., butcher, Newport market, applied to me, on the 7th January, 1824, with two perforations through the palatine portions of the maxillary bone, accompanied by a fissure of more than an inch in length, extending from the hard palate directly through the whole of the velum, which adhered to the back part of the throat, the uvula being entirely destroyed. The particulars of this case where as follow :—

Between the years of 1809 and 1815 he had several syphilitic infections, from each of which, he was apparently cured, the symptoms having disappeared under varied treatment; but some time during the following year secondary symptoms appeared, in the form of an ulcerated sore

throat, with pain in the limbs, &c. The ulceration spread over all the back parts of the throat, extending even to those covering the osseous palate; and before a stop was put to the ravages of the disease, two circular pieces of bone exfoliated from different openings in the hard palate. As the ulcerated parts began to heal, the ragged edges of the velum, were attached, by adhesive inflammation, to the back part of the throat, thereby stopping up the natural communication between the nose and mouth, except through the medium of a long fissure, which exactly divided the velum, commencing at the posterior edge of the os palati, and continuing downward, to the length of an inch, to the place of its attachment; the uvula being altogether destroyed. The patient experienced considerable difficulty during deglutition; small portions of solid food occasionally passed through the fissure, and, from being retained there, produced considerable inconvenience, until they were removed. The frequent escape of fluids through the nose, can readily be conceived. The articulation was very unintelligible; and the tone of the voice was so disagreeable, as to preclude him, in a great measure, from public employment.

To compensate, as far as possible, for this

peculiar deficiency and arrangement of the parts, I obtained as perfect a model as circumstances would permit, as every attempt brought on vomiting; from which model a silver plate was accurately fitted to the roof of the mouth, extending across from the molares on either side, thereby covering the two circular holes left by the exfoliated bone from the hard palate. A spring of highly elastic gold, properly shaped, was next fitted to the posterior and centre of this plate, to the extremity of which was attached another small silver plate of a long oval form, which exactly covered the fissure in the soft palate.

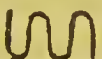
From the peculiar construction of this spring, it was made to partake of all the varied motions of the parts during deglutition; at the same time, always keeping the fissure sufficiently closed. The back part of this little plate was covered with soft wash leather, and the whole apparatus was held up, as usual, by means of elastic gold bands, which were fastened round the two molar teeth on each side. For some time after the first introduction of this apparatus, a slight inclination to vomit continued, which, however, gradually became less and less troublesome, and at length ceased. Food

of every description could now be swallowed without the least inconvenience; and the speech was so much improved as to give the greatest satisfaction both to the patient and to those medical gentlemen to whom I had the pleasure of presenting him.

Perforations through the velum alone, have hitherto been supplied with little success, the instruments not being skilfully adapted. An Obturateur suitable for supplying a defect of this description, should possess the following qualifications.—It should perfectly close the perforation, and at the same time make no pressure that will occasion distention of the sides of the cavity, and whatever may be placed over it, should be made to follow all the varied movements of the adjacent parts, without its position being altered, and without producing friction. The following case will shew how far this object was accomplished, in an instrument which I invented for the supply of a perforation through the velum pendulum palati.

A lady advanced in life, had a considerable perforation through the centre of the velum, which commenced at the termination of the hard

palate, and extended backward almost to the uvula, the edges being exceedingly ragged and uneven; the speech was so imperfect as to be almost unintelligible. An Obturateur was constructed after the following method :—

A band of platina was fitted across the Palate, opposite the last molar teeth, to which it was attached. At the posterior middle of this band was affixed by one extremity, a highly elastic gold wire spring, bent in a peculiar shape, thus  which was sufficiently long to admit the other extremity to come just in the centre of the perforation, which was covered by a plate rather larger than the cavity, to the back part of which was soldered another, exactly fitted to its shape and size; to the centre of the larger plate was attached the other extremity of the spring. When the posterior plate was properly adjusted, it became gently pressed over the orifice, by means of the spring, which retained it in situ, under all the varied motions of the velum. The restoration of the speech was so complete, after the introduction of this instrument, that it would have been difficult to ascertain whether there had been any previous defect. This Obturateur will be found to answer the purpose in all similar cases to the former, where

there are teeth remaining to which the springs may be attached, to hold the cross plate firmly in its position. But where the teeth are deficient, the instrument will of course be useless, and one of a different construction should be employed.

The winged Obturateur may here sometimes be used with success, where the pressure of the wings does not produce great inconvenience ; but where this is the case, a plate should be fitted to the whole roof of the mouth, reaching as far back as the termination of the hard palate, upon which plate should be fitted a bed of bone, carved to the shape of teeth, or, if preferred, it may be supplied with natural teeth. This should be held in its situation by spiral springs, adjusted in a similar manner to those in general use, where whole sets of teeth are supplied. To the centre of the back part of the plate should be affixed the same spring and plate as the before-mentioned, which will be found to answer all the purposes of the former instrument.

DEFECTS

OF THE

OS MAXILLARY SUP: OS PALATI, &c.



A loss of any portion of the maxillary or palatal bone is, of all defects, one of the most frequent in occurrence, and least difficult to supply; it is generally either a loss of some part of the anterior and superior portion of the os maxillary superior extending upwards into the nose and backwards into one or both antra, or a distinct perforation through the palatine portion of that bone, or the os palati forming a communication between the nose and mouth. These are, however, frequently both combined in one case, as in the following, which was pub-

lished in the London Medical Repository. Vol. I. page 205, New Series

On the 16th October, 1823, J. B——, carpenter, aged thirty-five, applied to me with exfoliation of a large portion of the upper jaw, under the following circumstances. —Towards the close of December, 1821, he caught a violent cold, which most particularly affected the teeth and gums: one of the molares in the lower jaw of the right side appearing to be the principal seat of pain, it was therefore extracted. The following morning, very extensive inflammation had taken place in the upper jaw; the whole of the face was highly tumified; and, after a fortnight, it was considered requisite by the medical attendant to extract the cuspidatus of the left side from the same jaw. This operation was followed by a discharge of pus from the socket, which subsequently, convinced me it must have proceeded from the antrum. This discharge continued for upwards of six months, when the face was again attacked by violent inflammation, which was relieved by the bursting of another abscess. After the tumefaction had in some measure subsided, a portion of the upper jaw became loose to the extent of five teeth from

the lateral incisor, on the right side, to the second bicuspid on the left. The necks of the teeth became exposed, the gums gradually retiring. As the disease increased, the teeth dropped out successively, the discharge was thin and highly offensive, and the patient's general health became severely affected.

It was at this period of the disease, that the case came first under my care. Upon examination, I found a portion of the os maxillare superius exfoliating from the lateral incisor to the second bicuspid, extending backward to the os palati, and upwards into the nose. I directed for him lotions of decoction of bark and nitric acid, with which the mouth was constantly washed. Bark and wine were likewise given internally. Exfoliation went on rapidly, and early in November a large portion of the bone was removed, comprising nearly the whole floor of the nose. Three days afterwards, another piece came away at the posterior part of the Palate, leaving a perforation, nearly the whole extent of the palatal portion of the maxillary bone being exfoliated an immense cavity was exposed. During deglutition, a considerable portion of food, especially that of a fluid nature, passed

immediately into the nose, causing considerable inconvenience and misery to the patient, and his articulation was perfectly unintelligible. Lotions of infusion of roses, alternately with borax and tincture of myrrh, &c., were used ; and within three weeks after the exfoliated bone came away, the appearance of the remaining part of the mouth became sound and healthy.

A correct cast was now taken of the deficiency, and a silver plate was accurately fitted to the cavity, extending backward to the commencement of the soft palate. Upon this plate was fitted a bed of bone, which filled up all that part formerly occupied by the exfoliated bone. This was properly shaped, and made to receive five natural teeth, which were fastened to pivots through the bone and riveted to the plate, the whole apparatus being held up by gold springs soldered to the plate, which were attached round one of the teeth on each side. By this arrangement, the appearance of the mouth was altogether restored ; and the power of mastication and of speech were rendered, in every respect, as perfect as before the accident. The patient assured me that he was unconscious of ever having had any syphilitic taint, though

he had evidently taken mercury to a considerable extent.

One very material circumstance connected with this case I cannot omit to mention. Within a month from the completion of my labours, he was affected with chronic rheumatism (to which he was liable); and, applying to an empyric in the Kent Road for the relief of his pains, he was furnished with a box of strong mercurial ointment, with directions to rub in very largely. To this recommendation he unfortunately attended. Within four days his mouth and gums became violently affected; a sloughy state of the gums was now evident. Exfoliation of a further portion of bone commenced, with an extremely foetid discharge; and I was vexed to find that my contrivance could, of course, no longer be retained as before. The effects of the mercury were counteracted as speedily as possible; and after the parts had regained their former state of health, I was under the necessity of remodeling the deficiency, and of altering the plate, so as to replace it in the efficient state in which it was before.

Since the publication of the above case, I have supplied a defect, where the loss of parts was

much more extensive. The patient had lost the complete half of the os maxillare superius, leaving a cavity which extended from the anterior incisor along the palatine raphè to the commencement of the soft palate, exposing, to its whole extent, the left antrum, and making a free communication between the nose and mouth. This loss of substance was supplied by an Obturateur somewhat similar to the last described, with this exception, that the plate was of gold, and was fitted over the whole extent of the hard palate, and held in its position by gold caps soldered to the plate, which caps fitted over the teeth on the sound side and held the whole apparatus steady in its position.

Defects of the hard palate produced by disease, &c., are not unfrequently attended with loss of the upper lip, which may be supplied either by gold enamelled, elastic gum, or bone, which, if scientifically adapted, and coloured, will have all the appearance of the natural parts.

The following case, mentioned in the Medical Repository, is one supplied by the latter substance.

The patient had undergone the talicottian

operation with most complete success, which was performed by my friend, Mr. Davis. There was however, still remaining a loss of the anterior arch of the maxillary bone, to the extent of four teeth, with a deficiency of a considerable portion of the upper lip. These defects were supplied in the following manner:—An Obturateur with bone, similar to those last described, carrying four natural teeth, supplied the deficiency in the maxillary bone. A cast was then procured of the lower half of the face, by means of which, a piece of ivory was accurately fitted to the deficiency in the lip, and was shaped and coloured to imitate what the parts were in their original state. To this artificial lip was affixed mustachoes, which intermixing with his own, that were permitted to grow, hid the line of union between the natural and artificial parts. It was held in its position by two pivots screwed into its under surface, which passed through the anterior face of the bony part of the Obturateur. The artificial lip could therefore be removed without disturbing the Obturateur, at the pleasure of the patient, and was found to answer almost all the purposes of the lost parts.

A deficiency of any portion of the lower jaw, is of much less frequent occurrence than that of

the upper ; notwithstanding, where this accident does occur, it is possible to remedy the defect with the most perfect success, as will be seen by the following case of the loss of a large portion of the lower jaw, with a perforation through the cheek, occasioned by an injury from a musket ball.

About twelve months since, a naval officer applied, who had been wounded in the cheek by a musket ball, which had carried away a large portion of the left side of the inferior maxillary bone, almost to its base, occasioning the loss of all the lower teeth except the *dentes sapientiæ* of the right side, which still remained. The whole being accompanied by a perforation through the left cheek, giving rise to the most unpleasant inconveniences. During mastication the saliva flowed constantly out of the mouth through the perforation. To remedy this defect a plate was fitted upon the remaining portion of the jaw, from the *dentes sapientiæ* to the extremity of the opposite side, which was held in its position by a cap fitted over the remaining tooth : upon this plate was fitted a bed of bone which was fastened to it by pivots soldered to the plate and passing through the bone, upon which they were riveted. The bone was shaped to imitate the natural

parts, with teeth formed to permit the mouth to shut, so that the patient might masticate with comfort. This part of the defect being accomplished, a cast was taken of the perforated side of the face, by which, a piece of prepared elastic gum was accurately fitted to the perforation, the outer surface, being coloured and supplied with whiskers to imitate the natural parts. It was held in its proper situation by an elastic spring, attached to the outer side of the bone piece, which permitted it to follow the motions of the cheek. With this apparatus the patient could masticate with comfort, the saliva being kept from passing through the cheek.

As I am upon the subject of injuries of the lower jaw, it may not be uninteresting to quote the following case of fracture, occasioned by the unscientific application of the key instrument, although it is somewhat digressing.

In November last, an apparently healthy countryman applied to me, with a violent swelled face, accompanied with a highly offensive discharge of sanies from the mouth, produced by the exfoliation of a large portion of the lower jaw, extending from the anterior incisor to the ascending spine of the coronoid process.

He stated, that on the 7th of September, he had requested a medical gentleman in the coun-

try, to extract one of the teeth in the lower jaw. After applying the instrument and using considerable force, the crown of the tooth was snapped off. A second though unsuccessful attempt was made to extract the stump, when the patient desired the operator to desist, as he evidently felt the jaw crack under the last application of the instrument. A third attempt however being persisted in, the stump was removed. Most severe and lancinating pain followed the operation, which extended over the whole side of the face. On the following day the face, eyes, and head were highly tumified, and the pain was most excruciating. These symptoms continuing to increase in violence during several days, when an abcess formed at the symphysis of the jaw, which pointed and burst externally. The orifice soon healed, and the matter passed into the mouth through several openings. It was at this period I first saw him.

Upon examining the mouth, I found a portion of bone, extending from the anterior incisor to the dens sapientiae and comprising the whole base of that side of the jaw, rapidly exfoliating. The mouth was horribly distorted, the integuments having retired from the portion of bone almost to its base; the whole was accompanied by a continual discharge of offensive matter, which mixing with the saliva, continued running out of the corner of the mouth. In six weeks the

bone became sufficiently loose to be removed, which was readily accomplished. I directed for him, lotions of infusion of roses with borax and tincture of myrrh, to be used to the mouth frequently. Healthy granulations were soon observable, and that part near the symphysis soon healed. A considerable discharge was still kept up from two different sinuses at the posterior part of the jaw; these were dilated into one, and injections of diluted nitro muriatic acid were constantly used. During the following week two smaller pieces of bone were extracted. The whole of the left side of the jaw, from the symphysis to the angle of the base, being now removed, mastication could not be performed but in the most imperfect manner on the healthy side. As the parts gradually healed, a substance of cartilaginous consistence could be distinctly felt, situated between the divided ends of the bone at its base. The head was now bound up, so that the remaining parts of the jaw might be kept, as near as possible, in their natural situation, and the former lotion with infusion of roses, was substituted for the acidulous one. The substance between the ends of the bone gradually increased in size and firmness, and in a fortnight the cavity between the fracture was nearly filled up. The two ends being firmly united, mastication was now performed, on the healthy side, with scarcely any inconvenience. The discharge soon ceased, and the

patient perfectly recovered. The deformity of the countenance was very trifling, being scarcely perceptible. One principal peculiarity in this case, was the rapidity with which nature effected the process of exfoliation and reproduction. I had purposed supplying this case in a similar manner to the one before mentioned, had not nature performed the cure so admirably.

It may be necessary to mention, before I conclude these observations, that the authenticity of the cases here described, does not stand merely upon my own assertion, as almost all of them have been seen by surgeons of eminence, or by those medical gentlemen who live in the immediate vicinity of my own residence.

Being aware that the art of supplying defective Palates is out of the routine of general practice, and at the same time knowing by experience that the opinion of medical professors is not unfrequently asked, as to the sources of relief in these defects, I have collected together these observations, combined with my late improvements, that they may be aware of the present state of this hitherto neglected art, and be enabled to judge how far success is attainable by the skilful adaptation of proper Obturateurs.

